

## Effect of dioxane on the binding of competitive inhibitor proflavin and catalytic activity of bovine pancreatic $\alpha$ -chymotrypsin

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### Abstract

The binding of competitive inhibitor proflavin by  $\alpha$ -chymotrypsin in water-dioxane mixtures over the entire range of thermodynamic activities of water  $a_w$  was studied. The data on the degree of binding of proflavin were compared to the results on the catalytic activity of the enzyme preliminarily incubated in water-dioxane mixtures. An analysis of the behavior of the concentration dependences of these characteristics demonstrated that, at low  $a_w$  values, the behavior of the interprotein contacts in the enzyme formed during its drying largely governs its functional properties, while at high  $a_w$  values, they are determined by the interaction of the enzyme with the organic solvent. Interplay of these two factors is responsible for the observed complex shape of the isotherm of binding of proflavin, with the maximum degree of binding being attained at moderate  $a_w$  values. © 2007 Pleiades Publishing, Ltd.

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